1971

TEXTILE MUSEUM JOURNAL

Volume III, Number 2 December, 1971

Eastern Hemisphere
Curatorial Office

CONTENTS

A SECOND TYPE OF MUGHAL SASH

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Three fragments in the collection of the Textile Museum once formed the ends of long narrow sashes woven in India (Figs. 1, 2 and 3). Each fragment has a selvedge to selvedge width of only one end of a double-ended fabric such as those the authors discussed in the 1970 Textile Museum *Journal*. What distinguishes these three fragments from the type previously discussed is the entirely different woven structure, used to pattern the horizontal end panels with narrow bands at top and bottom and used also on the vertical side borders.

Considering the following features, these three sash fragments are related to the first type of complete sash in concept, style and use. The layouts of the three sashes, if complete, would have been the same with narrow vertical side borders along a field connecting horizontal panels at each end, bordered at top and bottom by narrow bands (Fig. 4). The plants in the horizontal panels would be in their natural growth position when seen from either end of the long sash. There is an even number of plants in each panel and an indication of a central lengthwise fold which, as worn, would have divided the width of the sash and the number of plants in half. The distinguishing structure about to be discussed is restricted to each horizontal panel with its bands and the vertical side borders and, as it makes use of a major amount of metal, adds weight to the hanging ends of the sash when worn. A metal-wrapped silk yarn is used for the background of the floral patterned borders and panels. There is evidence that the three fragments were subjected to considerable pressure when glazed as a finish. The vertical side borders are emphasized by a slight difference in color from the rest of the fabric by the use of warps of a different color. One of the fragments, T.M. 6.33 (Fig. 3), shows the remains of an additional horizontal band above the panel. Based on these immediate observations alone, these three fragments were certainly the ends of sashes of Indian manufacture for Indian use.

The following technical details strengthen the relationship between the two types of sash. The warps are silk, twisted Z and S. The wefts in the heading or finish (Fig. 4, Section *a*) are doubled natural or dyed Z-spun cotton. The wefts in Sections *b* are either multi-colored silk with no particular twist or metal-wrapped silk—narrow strips of gilded silver (?) wound Z onto a yellow silk yarn. The wefts of Section *c* are doubled natural or dyed Z-spun cotton and dovetailed with adjacent wefts of Sections *b*—the vertical side borders. The selvedges are reinforced by a single cotton cord, very little of which remains.

Several differences between the two types of sash, in addition to the distinctive structures of each, should be noted. The warp counts of the three fragments here range from about 34 to 44 per cm; while those of the first type discussed in the 1970 *Journal* range from about 62 to 72 per cm. The average selvedge to selvedge width of the three fragments is about 45 cm compared to the average of the first type of about 50 cm. The heights of the flowering plants in the horizontal panels of the three fragments

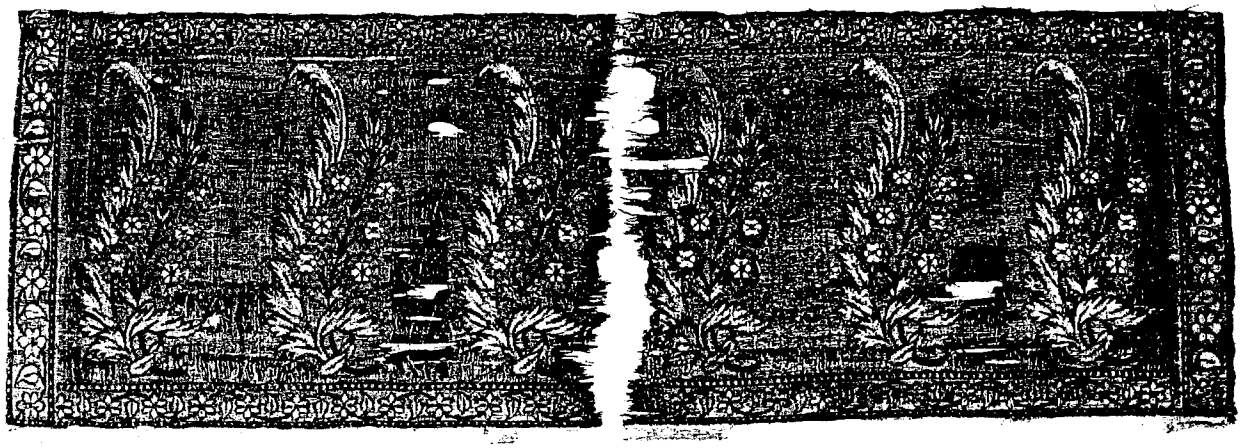

Fig. 1 Fragment of one end of a sash. Six plants in blue green, yellow green and two reds on a gold background within a horizontal panel. Floral vine borders. Red orange field. *Height:* 17 cm; *width, selvedge to selvedge:* 47 cm. T.M. 6.31.

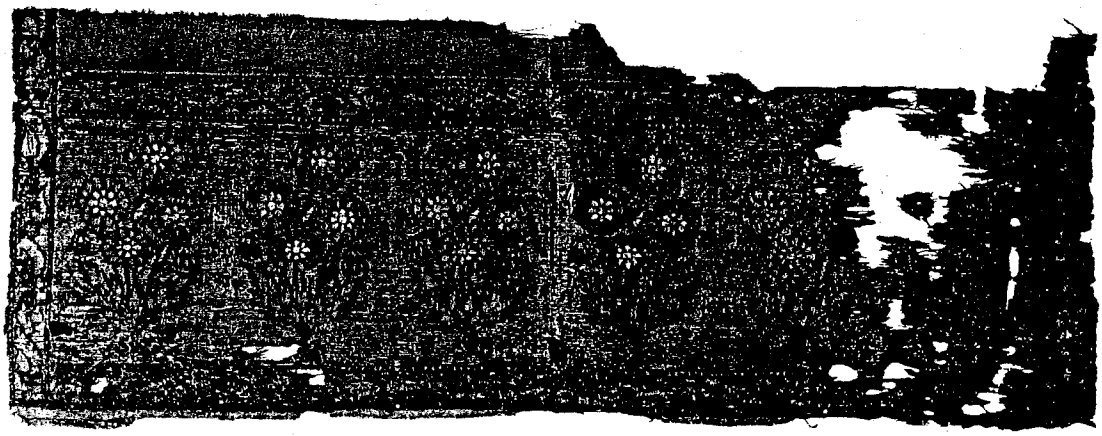

Fig. 2 Fragment of one end of a sash. Six plants in red, two pinks and yellow on a gold or silver background within a horizontal panel. Floral vine borders. Dull yellow field. *Height:* 17.5 cm; *width, selvedge to selvedge:* 45 cm. T.M. 6.32.

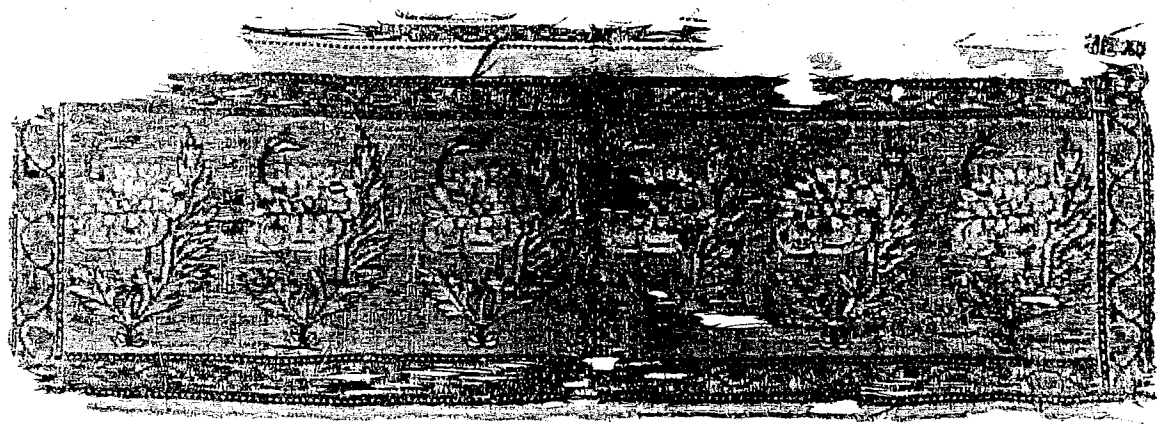

Fig. 3 Fragment of one end of a sash. Six plants in blue green, two reds, pink and yellow within a horizontal panel. Floral vine borders with at least one additional border at top. Dull red field. *Height:* 15 cm; *width, selvedge to selvedge:* 42 cm. T.M. 6.33.

(an average of 10 cm) are about half those in the first group (20 cm).

As previously noted, the two types of sash are patterned according to the same concept following the same pattern layout. As in Fig. 4 each sash for the purpose of this discussion can be divided into three sections to distinguish layout as well as structure. Section *a* designates the heading or finish, the structure of which is shown in Fig. 8A,B,C. Section *b* designates the floral patterned panels and borders, the structure of which is shown in Fig. 7. Section *c* designates the field, the structure of which is shown in Fig. 8A.

The major part of the discussion here is focused on the structure used in the floral patterned horizontal panels and bands and the vertical side borders (Fig. 4, Section *b*). Fig. 7 is a diagram of the structure as used in these areas in the three fragments, but we must first discuss the basic concept of this structure. Fig. 5 is a diagram of this basic structure which has been described and named in various ways. The term recommended by the Centre International d'Etude des Textiles Anciens is *taqueté*: "weave, derived from reps lancé, with two warps, main and binding, and two wefts, main and pattern. The surface is covered by floats of the pattern weft which is bound in tabby by the ends of the binding warp" (Centre International 1964). Nancy Reath and Eleanor Sachs applied the term *plain compound cloth* and described it as ". . . a fabric with the

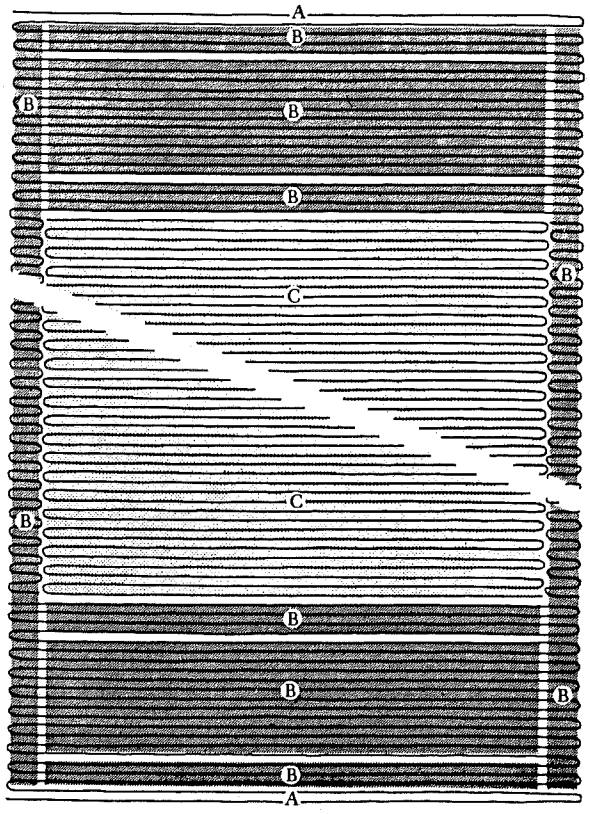

Fig. 4 Layout of sashes. *a:* heading and finish. *b:* horizontal end panels and bands and vertical side borders. *c:* field.

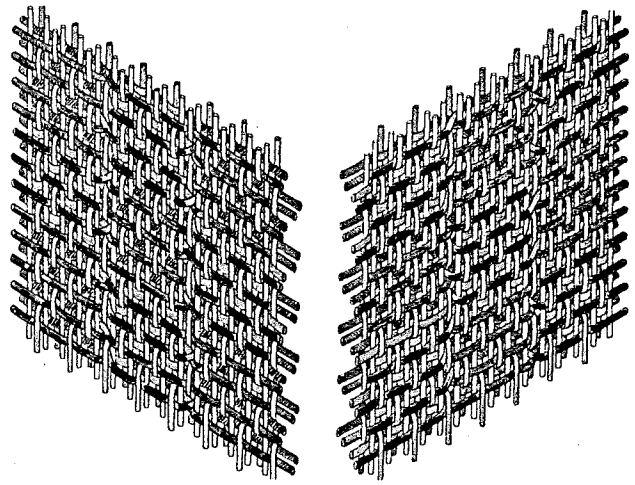

Fig. 5 Diagram of two faces of the structure *complementary-wefts plain weave with inner warps.*

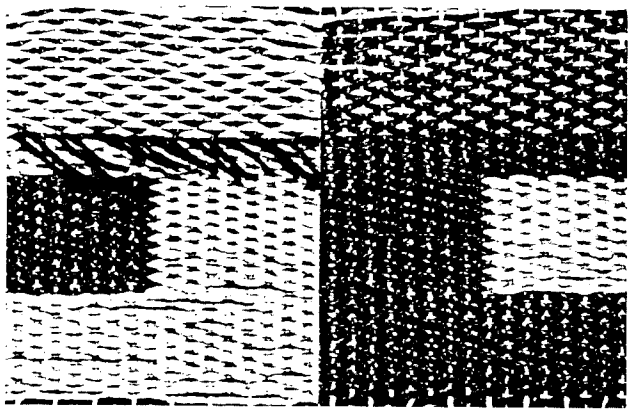

Fig. 6 Two faces of a fabric woven with the structure *complementary-wefts plain weave with inner warps.* Note that in the top portions, the inner warps have been removed. Photo by Yorishige Saito.

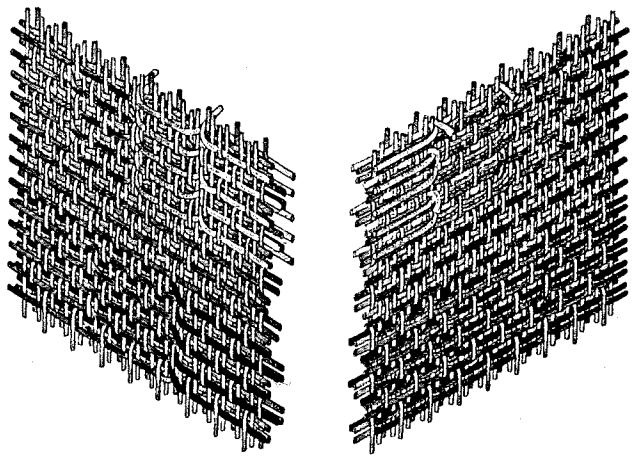

Fig. 7 Diagram of the structure *complementary-wefts plain weave with inner warps* as used in T.M. 6.31, T.M. 6.32 and T.M. 6.33. *Front* left and *back* right.

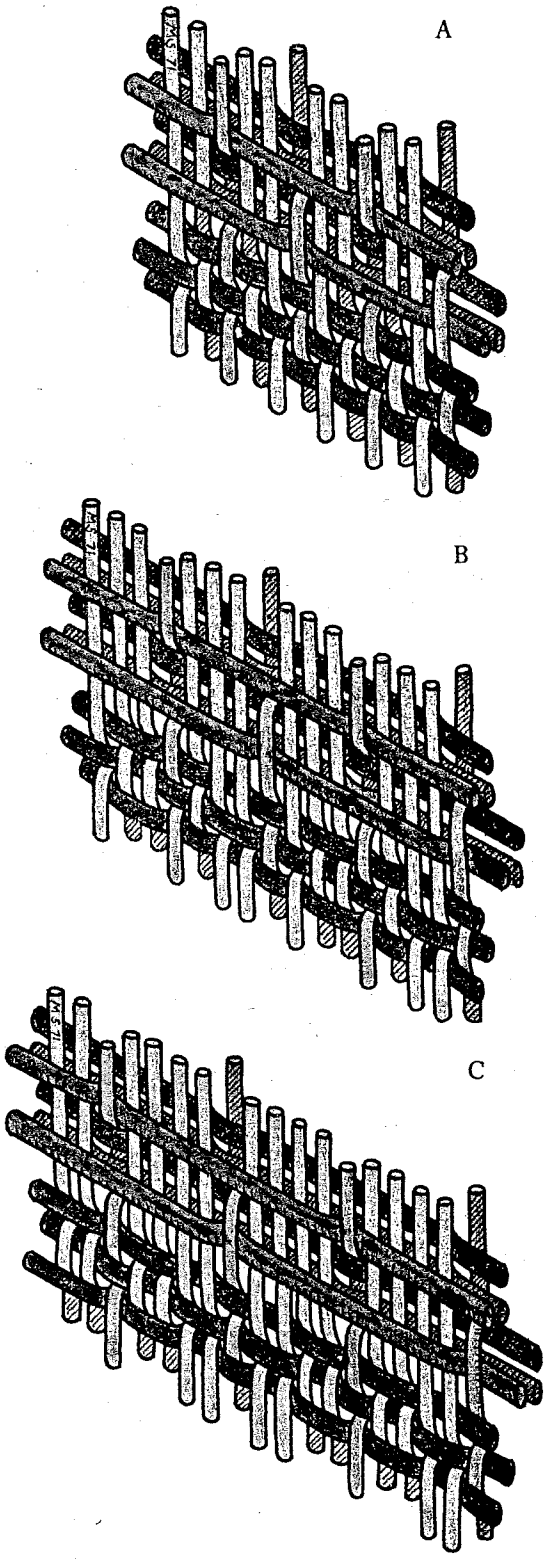

Fig. 8 Diagrams of the relationships of the structures *complementary-wefts plain weave with inner warps* and *predominantly warp-faced plain weave.*

main warp and weft interwoven as in Plain cloth, and with one or more extra warps or wefts, or both, used for the design or reinforcing. Plain compound cloth may be reversible" (Reath 1937). Irene Emery classified it as a type of *double-faced weave* under compound structures and described it as *"a double-faced* weave structure, each face of which is formed by three-span *weft floats* in *alternate* alignment" (Emery 1966, p. 150). The term given by Shinzaburo Sasaki, literally translated from Japanese, is *"weft-faced compound plain weave"* (Sasaki 1951). We have been using the term *"complementary-wefts plain weave with inner warps,"* and our description and discussion of it follow.

Fig. 6 is a detail of a fabric showing a surface produced by this structure. The immediate impression is that it is a *weft-faced plain weave.* However, note that the surface is relatively flat and not particularly ribbed as would be the simple structure *weft-faced plain weave* which contains only one set of warps and one set of wefts.

Actually, this is a weft-faced compound structure, having one set of wefts composed of two complementary wefts and two sets of warps. Each of the two sets of warps has a different function; these sets can be described as the binding warps and the inner warps, respectively (Fig. 5). One binding warp alternates with one inner warp.

The two wefts are complementary to each other. That is, when two or more elements ". . . have the same direction in a fabric and are co-equal in the fabric structure, they can be described as complementary to each other" (Emery 1966, p. 150). What is unusual about the wefts in this structure is that they "... play equivalent and reciprocal parts on opposite faces of the fabric...." (Emery 1966, p. 150). In one shed, when one weft on one face interlaces over three warps and under one warp, its complement on the opposite face interlaces over one and under three, offset by one inner warp. The successive two complementary wefts in the next shed interlace in the same way, respectively, but are offset by one inner warp and one binding warp. This is the sequence of this structure, and in this way both faces are identical. Note that the binding warp is binding two complementary wefts in each shed in plain weave, and that the set of warps described as the inner warps does not appear on either surface. Study the edges of the diagram in Fig. 5 cut along a binding warp, and note how this warp bends to pass alternately over and under the two complementary wefts in each shed.

The set of inner warps is the unique feature of this structure. Without appearing on either face, they separate the two complementary wefts, forcing one to the front and the other to the back and, in so doing, control the pattern. At the same time they expand the placement of the binding warps causing three-span weft-floats allowing the wefts to predominate on both faces. Study the edges of the diagrams in Fig. 5 cut along a straight inner warp. The function of the inner warps could be clarified by their removal as shown in the top portion of Fig. 6, thus resulting in a simple fabric—*weft-faced plain weave*—with two wefts,

each of a different color, combined in the same shed. Thus we can understand the important role of the inner warps in this structure.

Since the wefts are predominant on both faces, patterning in this structure is achieved by the exchange of faces of the two complementary wefts and effected by a contrast in the colors of each. The pattern would be reversible (often with no clearly defined front and back)—dark on light on one face, light on dark on the other—and the structure as already explained would be the same on both faces. A flat and unbroken surface is characteristic of this structure.

Fig. 7 illustrates this compound structure—*complementary-wefts plain weave with inner warps*—as used in the three sash fragments. The inner warps in the diagrams in Fig. 7 are shown as one structural unit. Actually, in all three each inner warp within the width of the horizontal panel is doubled. In T.M. 6.32 (Fig. 2) and T.M. 6.33 (Fig. 3), each inner warp for the side borders is tripled and in T.M. 6.31 (Fig. 1), quadrupled. The binding warps of all three are single for the entire selvedge to selvedge width.

In Fig. 7 each of the lower five sheds has three complementary wefts. When one appears on the front, its two complements appear together on the back. Study the edges of the diagrams cut along a binding warp, and note how this warp passes alternately over and under three comple-

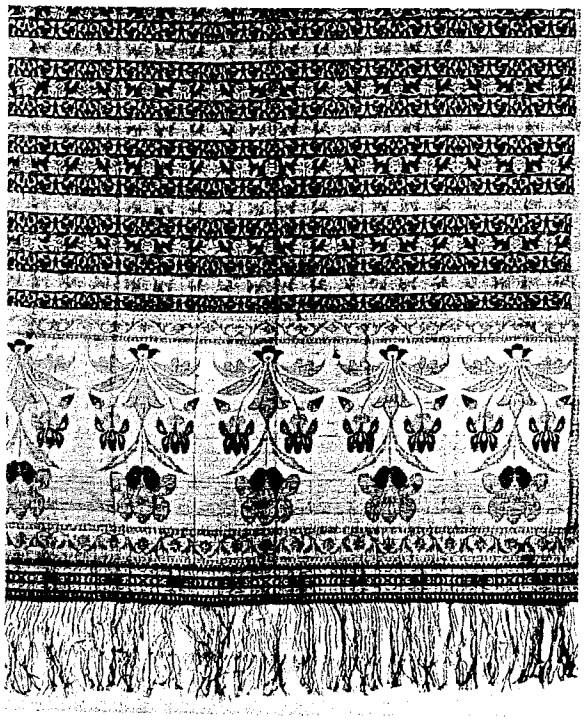

Fig. 9 One end of a Persian sash. Five flowering plants in green, yellow and light blue outlined in rose pink within a horizontal panel on an ivory background. Rose pink and ivory floral vine borders. Two alternating horizontal floral bands in rose pink and ivory, rose pink and blue, or ivory and green fill the entire field. Wide patterned heading and plied warp fringe. The sash was not woven with the pattern in mirror image. Evidence of a central lengthwise fold. T.M. 3.19.

Fig. 10 One end of a Polish sash. Two flowering plants in a panel and floral vine borders in red, orange-pink and green outlined in black on a silver background. Two alternating horizontal floral bands in orange-pink, red(or blue) and green outlined in black on a silver background fill the entire field. Metal fringe attached. Evidence of four central lengthwise folds. T.M. 82.11.

mentary wefts. No matter how many complementary wefts are used together in one shed (up to eight have been used in certain fabrics) only one weft appears at a time on the front which is controlled by the inner warps. Fabrics patterned with three or more complementary wefts are not reversible (there is an unmistakable front and back), as various combinations of wefts on the back produce areas of mixed color. This is the patterning technique in only the horizontal bands above and below the panel (plus any additional bands), including adjacent sections of vertical side borders. The three colors in T.M. 6.31 (Fig. 1) are gold for the background plus blue green and yellow green for the floral pattern; T.M. 6.32 (Fig. 2), gold or silver for background plus red and pink for the pattern; and T.M. 6.33 (Fig. 3), gold for background and blue green and red for the pattern.

The upper eight sheds in Fig. 7 have two complementary wefts. The top five have, in addition, complementary wefts which are discontinuous. These are added from area to area, to pattern, and when not in use are free-floated on the back. Note that the two continuous complementary wefts, when not on the front to pattern, are combined and bound on the back as in the lower five sheds. This patterning technique with brocading (Emery 1966, p. 141) is used only for the horizontal panel including adjacent sections of the vertical side borders. In T.M. 6.31 (Fig. 1) the two continuous complementary wefts are gold for the background and blue green for the plant stems and outlines with a yellow green and two red discontinuous complementary wefts for details of the flowers. In T.M. 6.32 (Fig. 2) the two continuous wefts are gold or silver for background and red for stems and outlines with pink and yellow discontinuous wefts for details. In T.M. 6.33 (Fig. 3) the two continuous wefts are gold for background and blue green for stems and outlines with red, pink and yellow discontinuous wefts for details.

Each fragment has the remains of a heading or finish (Fig. 4, Section *a*) the structure of which is *predominantly warp-faced plain weave*. Its relationship to the *complementary-wefts plain weave with inner warps*, with a varying number of inner warps in each unit, must be observed in detail. As we have noted, in all three fragments doubled inner warps are used within the width of the horizontal panel and therefore become part of the plain weave as in Fig. 8A. Tripled or quadrupled inner warps are used for only the widths of the vertical side borders and, therefore, become part of the plain weave as in Figs. 8B and C, respectively.

Very little of the field of each fragment remains (Fig. 4 Section *c*), and it is impossible to say how it was patterned, if at all. What remains is *predominantly warp-faced plain weave*. Since the width of the field is the same as that of the horizontal panel with doubled inner warps, the relationship of their respective structures is as in Fig. 8A. The wefts of the field are not continuous from selvedge to selvedge but dovetail with adjacent wefts of the vertical side borders which remain only in T.M. 6.32 (Fig. 2).

The colors of the warps of the side borders are different from those of the rest of the fabric, emphasizing their vertical direction. In T.M. 6.33 (Fig. 3) the binding as well as the inner warps of the side borders are yellow while those for the rest of the fabric are red. In T.M. 6.32 (Fig. 2) the binding as well as the inner warps of the side borders are yellow orange while those of the rest of the fabric are dull yellow green. In T.M. 6.31 (Fig. 1) only the binding warps for each side border are yellow, while the rest are red. The size of the binding warps and the inner warps is the same.

In Fig. 7 we have put the continuous weft for the background—the metal-wrapped silk—in each shed first and the others in successive order, the discontinuous, last. With the plants in their natural growth position, this is the order in T.M. 6.33 (Fig. 3). The weft order is reversed in T.M. 6.31 (Fig. 1) and T.M. 6.32 (Fig. 2) with the discontinuous weft first and the continuous background weft last, again with the plants in their natural growth position. In general, shuttle order (weft order) when weaving follows this principle: first—continuous background weft, second—continuous pattern weft and third—discontinuous pattern weft. If this principle were followed in the weaving of these sashes, the last two fragments must have come from the terminal end of the sash, as woven, with the pattern in reverse. It is on this basis that we conclude that we are indeed dealing with long narrow sashes with identically patterned ends in mirror image.

The dating of these fragments presents an insurmountable problem. Why is it that the majority of sashes woven with this structure have been attributed to Persia of a seemingly late date? Since there are no other Indian sashes with this structure available for direct comparison, all we can do is relate this type of sash stylistically to those discussed in the 1970 *Journal* and settle for the moment on an 18th-century date.

The problem of determining a country of manufacture is complex, depending not only on technical and pattern details, but on the influence of subjective attitudes as well. For example, consider a study of all sashes woven with the compound structure—*complementary-wefts plain weave with inner warps*. We have pointed out an Indian type. There are the Persian type (Fig. 9) and the Polish type (Fig. 10) (Borchard 1970). We have observed so far that the Indian sashes are comparatively longer and lighter in weight. The flowering plants in the horizontal panels are more likely to be asymmetrical. There is a marked difference between the weight of the field and the hanging ends. This is achieved by a dovetailing or interlocking of wefts of the field with those of adjacent side borders (a time-consuming and skilled process). The process is a typical Indian one used in many other fabrics, even today, to achieve a variety of effects. Similar observations of details of construction, design and use common to other types of sashes could eventually resolve confused discussions and confirm areas of manufacture.

The structure we have been discussing is a variation of *complementary-warps plain weave with inner wefts* which

is known to have evolved in China and woven extensively as early as the Han Period (Voskresensky 1932; Burnham 1965). Later, in about the Sui or Tang Periods in China or the Sassanian Period in Persia, weavers exchanged its warp and weft orientation and created this structure—*complementary-wefts plain weave with inner warps* (Vial 1970). It should be noted that the binding order could be twill with no change in basic concept. Spontaneously evolved or not, variations of these structures can be found in a variety of geographic areas covering 25 centuries.

Having established an Indian use of the complementary-wefts variation in the form of these three sash fragments, we have begun to find more Indian fabrics with metal backgrounds in this structure which we hope to discuss sometime in the future.

Milton Sonday and *Nobuko Kajitani* both received training at the Textile Museum. This is their second article for the *Journal*. Readers will want to refer to "A Type of Mughal Sash," published in the 1970 *Journal*, in reading the preceding article. Mr. Sonday is presently curator of textiles at the Cooper-Hewitt Museum of Decorative Arts and Design, Smithsonian Institution, New York City. Miss Kajitani is senior restorer at the Metropolitan Museum of Art. This is the second in a series of collaborative articles dedicated to Miss Irene Emery to whom the authors are deeply indebted for her approach to the study of fabric structures.

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